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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,029	HIRAI, HIDEAKI	
	Examiner	Art Unit	
	Kim-Kwok CHU	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendment filed on 2/17/2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-11, 14-21 and 24-42* is/are rejected.

7)☒ Claim(s) *12 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 4, 21, 24, 37 and 40 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kitamura et al. (U.S. Patent 7,038,995).

3. Kitmura teaches an optical pick-up having all of the elements and means as recited in claims 1, 4 and 37. For example, Kitmura teaches the following:

Regarding Claim 1, the optical pick-up (Fig. 8) to perform recording or reproducing for an optical recording medium 10 (column 5, lines 12), comprising: a light source 1 configured to emit a light beam (Fig. 8); an objective lens 7 configured to focus the light beam onto the optical recording medium 10 (Fig. 8) and an aberration generation device 6 provided between the light source 1 and the objective lens 7 (Fig. 8; column 10, lines 18-21), the aberration generation device 6 being composed of two lenses 15, 16 with refractive powers different from each

other (Fig. 8; column 10, lines 25 and 26) and a driving device 153, 154 (Fig. 8), wherein the aberration generation device 6 is configured to generate coma aberration 156 (Fig. 8) for the beam focused by the objective lens 7, based on a detected value from a device 156 configured to detect a degree of tilt of the optical recording medium (column 10, liens 1-5) and is configured to generate spherical aberration 157 (Fig. 8) for the beam focused by the objective lens 7, based on a detected value from a device 157 configured to detect a substrate thickness of the optical recording medium (column 7, lines 61-66), wherein at least one of the lenses 16 is moved by the driving device 154 (Fig. 8) along a direction of an optical axis to generate spherical aberration (column 7, lines 65-67), and the other lens 15 is moved by the driving device 153 along a direction orthogonal (shift/tilt) to the optical axis to generate coma aberration (column 10, lines 1-5), wherein the tilt is compensated for by the coma aberration generated by the aberration generation device, and
wherein the substrate thickness is compensated for by the spherical aberration generated by the aberration generation device (Fig. 8; column 7, lines 65-67; column 10, lines 1-5).

Regarding Claim 4, the aberration generation device 6 generates coma aberration in a radial direction (tilt direction)

of the optical recording medium (Fig. 8; lens shift is in radial direction).

Regarding Claim 37, an optical information processing apparatus 158 (Fig. 8) to perform recording or reproducing of information for an optical recording medium, wherein the optical pick-up as is provided (Fig. 8).

4. Method claim 21, 24 and 40 are drawn to the method of using the corresponding apparatus claimed in claims 1 and 4. Therefore method claims 21 and 24 correspond to apparatus claims 1 and 4 and are rejected for the same reasons of anticipation as used above."

5. Claims 5, 8-11, 14, 17-20, 25, 28-30, 31, 34-36, 38, 39, 41 and 42 are rejected under 35 U.S.C. § 102(e) as being anticipated by Ando et al. (U.S. Patent 7,142,484).

6. Ando teaches an optical pick-up having all of the elements and means as recited in claims 5, 8-11 and 38. For example, Ando teaches the following:

Regarding Claim 5, the optical pick-up (Fig. 19) to perform recording or reproducing of information for a first optical recording medium 100 with a light beam of wavelength λ1, a thickness tl of a substrate thereof, and a numerical aperture NA1 for use thereof and a second optical recording medium 100 (second layer) with a light beam of wavelength λ1 (Fig. 19), a thickness t2 (>tl) of a substrate thereof, and a numerical aperture NA2 (< NA1) for use comprising: an aberration generation device 50, 52, 54 configured to generate coma aberration or spherical aberration for a beam focused by an objective lens 60 (Figs. 6 and 19); a device configured to perform a first control operation comprising:

a first step of, when a medium determination device configured to determine which of the first and second optical recording media is set determines that the first optical recording medium is set (inherent feature for a two layer

medium), setting a quantity of the coma aberration generated by the aberration generation device 930 to a predetermined stored value (Fig. 19),

a second step of varying a quantity of the spherical aberration generated by the aberration generation device 50,52, 54 (Fig. 6) to determine and store a driving condition of the aberration generation device (Figs. 20 and 21), wherein the driving condition is a condition for which an amplitude of a recording information signal or a track error signal is at a maximum (servo focusing/tracking operation), and

a third step of performing an operation of recording or reproducing while a quantity of the spherical aberration is added based on the driving condition (Fig. 19; spherical aberration compensation) and

a device configured to perform a second control operation comprising:

a fourth step of, when the medium determination device determines that the second optical recording medium is set (inherent feature for a two layer medium), setting a quantity of the spherical aberration generated by the aberration generation device to a predetermined stored value (applies spherical aberration to each recording layer),

a fifth step of varying a quantity of the coma aberration generated by the aberration generation device to determine and store a driving condition of the aberration generation device, wherein the driving condition is a condition for which an amplitude of a recording information signal or a track error signal is at a maximum (servo focusing/tracking operation), and

a sixth step of performing an operation of recording or reproducing while the quantity of the coma aberration is added based on the driving condition, wherein the aberration generation device is controlled by the device for the first and second control operations (Figs 23-35).

Regarding Claim 8, the aberration generation device 50, 52, 54 (Fig. 19) generates coma aberration in a radial direction of the optical recording medium (lens shift is in radial direction).

Regarding Claim 9, the aberration generation device generates under-spherical aberration at a time of recording or reproducing for the first optical recording medium and generates over-spherical aberration at a time of recording or reproducing for the second optical recording medium, at a center point of a beam focused by the objective lens to which beam no aberration is added (Fig. 22; thickness compensation by lens 50).

Regarding Claim 10, a value on a condition on which

aberration is best or an information signal is best in a process of assembling the optical pick-up is stored as the predetermined value, which value is used as a center point of the spherical aberration or the coma aberration generated by the aberration generation device (Figs. 23-25).

Regarding Claim 11, the objective lens 60 (Fig. 19) is a lens providing a best aberration for the first optical recording medium and is provided with an aberration compensation element 52 comprising a diffraction element between the objective lens and the aberration generation device (Fig. 14; lens 52 has diffractive property).

Regarding Claim 38, an optical information processing apparatus 600 (Fig. 19) to perform recording or reproducing of information for an optical recording medium, wherein the optical pick-up as claimed in claim 5 is provided.

7. Claims 14, 17-20 and 39 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claims 14 and 20 however also recite the following limitations which are also taught by Ando. For example, Ando teaches the following:

Regarding Claim 14, the optical recording medium 100 (Fig. 30) in which p layers (p > 2) each with an information-recording surface are formed in a direction of a thickness thereof of which layers (p-q) layer(s) at a front side near an objective lens 60 (Fig. 19) is/are an information recording layer(s) with higher recording density and q layer(s) at a back side away from the objective lens 60 is/are an information recording layer(s) with lower recording density than the (p-q) layer(s) at the front side (Fig. 19; NA of the objective lens is selectable with respect to the layer arrangements).

Regarding Claim 20, the optical recording medium 100 has, at least, information-recording surfaces at any two or more thickness positions of 0.1 mm, 0.6 mm, and 1.2 mm from a side of the objective lens (Fig. 30; column 2, lines 9-19; CD and DVD).

8. Claims 25, 28-30 and 41 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above.

9. Claims 31, 34-36 and 42 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claims 14 and 20 however also recite the following limitations which are also taught by Ando. For example, Ando teaches the following:

Regarding Claim 31, the optical recording medium 100 (Fig. 30) in which p layers (p > 2) each with an information-recording surface are formed in a direction of a thickness thereof of which layers (p-q) layer(s) at a front side near an objective lens 60 (Fig. 19) is/are an information recording layer(s) with higher recording density and q layer(s) at a back side away from the objective lens 60 is/are an information recording layer(s) with lower recording density than the (p-q) layer(s) at the front side (Fig. 19; NA of the objective lens is selectable with respect to the layer arrangements).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 6, 15, 26 and 32 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Ando et al. (U.S. Patent 7,142,484) in view of Kitamura et al. (U.S. Patent 7,038,995).

Ando teaches an optical pickup very similar to that of the present invention. However, Ando does not teach the following:

Regarding Claim 6, the aberration generation device is composed of two lenses with refractive powers different from each other and a driving device, at least one of the lenses is moved by the driving device along a direction of an optical axis to generate spherical aberration, and the other lens is moved by the driving device along a direction orthogonal to the optical axis to generate coma aberration.

Kitamura teaches the following:

An aberration generation device 6 being composed of two lenses 15, 16 with refractive powers different from each other (Fig. 8; column 10, lines 25 and 26) and a driving device 153,

154 (Fig. 8), at least one of the lenses 16 is moved by the driving device 154 (Fig. 8) along a direction of an optical axis to generate spherical aberration (column 7, lines 65-67), and the other lens 15 is moved by the driving device 153 along a direction orthogonal (shift/tilt) to the optical axis to generate coma aberration (column 10, lines 1-5).

Although Ando uses one aberration lens to perform both spherical and coma compensation, the compensation data is obtained from a test disk and then stored for later use. However, to compensate both spherical and coma aberrations are the same time during disk operation, it would have been obvious one of ordinary skill in the art to replace Ando's single lens aberration device with Kitamura's two lens aberration device, because each lens of the Kitamura's aberration device compensates one kind of aberration and as a result, the two lens aberration device compensate both spherical aberration or coma aberration simultaneously in real time.

12. Claims 15, 26 and 32 have limitations similar to those treated in the above rejection, and is met by the references as discussed above.

13. Claims 7, 16, 27 and 33 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Ando et al. (U.S. Patent 7,142,484) in view of Ogasawara et al. (U.S. Patent 6,859,429).

Ando teaches an optical pickup very similar to that of the present invention. However, Ando does not teach the following:

Regarding Claim 7, the aberration generation device has an electrode pattern configured to generate coma aberration and an electrode pattern configured to generate spherical aberration and is a liquid crystal element that sandwiches a liquid crystal layer.

Ogasawara teaches the following:

the aberration generation device 4 (Fig. 2) has an electrode pattern configured to generate coma aberration and an electrode pattern configured to generate spherical aberration and is a liquid crystal element that sandwiches a liquid crystal layer .

Instead of using additional lens to compensate aberration caused by thickness variation and tilt, it would have been obvious to one of ordinary skill in the art to apply liquid

crystal lens such as Ogasawara's because the liquid crystal optical element can assign light transmission properties over its surface to archive a specific aberration compensation.

14. Claims 16, 27 and 33 have limitations similar to those treated in the above rejection, and are met by the references as discussed above.

Allowable Subject Matter

15. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

In Claim 12, the aberration compensation element is provided with a diffraction element whereby recording or reproducing is made using light beams with selectively different diffraction orders dependent on an optical recording medium.

In Claim 13, the diffraction element is molded with the objective lens as one unit and a diffraction grating is formed on a surface of the objective lens at a side of a light source.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

Response to Remarks

17. Applicant's Amendment and Remarks filed on 2/17/2010 have been fully considered. With respect to the allowable subject matter in Claims 2 and 22 which incorporate to the previously rejected Claims 1 and 21, newly found prior art of Kitamura and Ando are cited as references to reject Claims 1, 3-11 and 14-42.

18. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington, can be reached on (571) 272-4483.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

/Kim-Kwok CHU/
Examiner AU2627
May 24, 2010

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/HOA T NGUYEN/

Supervisory Patent Examiner, Art Unit 2627